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10/577,881

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Michael Kund

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DICKE, BILLIG & CZAJA

FIFTH STREET TOWERS

100 SOUTH FIFTH STREET, SUITE 2250

MINNEAPOLIS, MN 55402

EXAMINER

REIDLINGER, RONALD LANCE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|---------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/577,881 | Applicant(s) KUND, MICHAEL | |
| | Examiner R LANCE REIDLINGER | Art Unit 2824 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2006 and 25 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 25 is/are allowed.
- 6) ☒ Claim(s) 21, 23, 24 and 33 is/are rejected.
- 7) ☒ Claim(s) 14-20, 22 and 26-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :04/28/2006, 04/18/2007, 10/24/2007 and 10/24/2007.

DETAILED ACTION

1. Claims 13-33 are pending in the current application. Claims 1-12 have been cancelled. Claims 13, 21, 25 and 33 are independent claims

Drawings

2. The drawings were received on 04/28/2006. These drawings are acceptable.

Claim Objections

3. Claims 14-20 and 26-32 are objected to because of the following informalities: Each claim repeats the same grammatical error “comprising wherein.” For example claim 14 would be more appropriate if rewritten “The memory arrangement as claimed in claim 13, ~~comprising~~ wherein the flag cells comprise ~~are of~~ the same memory cell type as the memory cells.” Appropriate correction is required.

4. Claim 21 is objected to because of the following informalities:

- a. The term “claims 21” in the claim should read “claim 21”
- b. The way the claim is worded, it appears that the memory cells comprise method steps of reading and refreshing as opposed to the method itself comprising these steps. Examiner suggests amending the claim in its pertinent part to “...arranged at crossovers between word lines and bit lines, ~~in which arrangement the memory cells~~ the method comprising: reading out information stored...” Appropriate correction is required.

5. Claim 22 is objected to because of the following informalities: Examiner cannot understand why the phrase “as such” or “such as” is recited. Examiner suggests amending the claim to read in its pertinent part “storing the occurrence of a reading operation as ~~such as~~ information in a flag cell...” Appropriate correction is required.

6. Claim 23 objected to because of the following informalities: the term “the affected cells” lacks antecedent basis in the claims. It appears that claim 23 may have been intended to be dependent on claim 22 as opposed to claim 21. Appropriate correction is required.

7. Claim 24 is objected to because of the following informalities: the term “another given event” lacks antecedent basis in the claims. As claim 21, on which claim 24 depends, is written there is no event that triggers carrying out a refresh operation. While at least one reading operation must have previously taken place, this reading operation doesn’t necessarily “trigger” a refresh operation. Additionally there is no first triggering event in claim 24. Appropriate correction is required.

8. Claim 30 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 25 already contains the limitation of “a refresh device for carrying out a refresh operation.” Claim 30 therefore has the exact same scope as claim 29 from which it depends and is not further limiting.

9. Claim 31 and 32 are objected to because of the following informalities:

They are word for word copies of claims 14 and 15. It appears that claim 21 should be dependent on claim 25 or one of its dependents and that claim 32 should depend on claim 31. Appropriate correction is required.

10. Claim 33 is objected to because of the following informalities: the term "the flag cell means" in the first line of the second stanza lacks antecedent basis in the claim. Examiner suggests deleting the word "means" in the aforementioned phrase. Appropriate correction is required.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "another given event" in claim 24 is a relative term which renders the claim indefinite. The term "given event" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In summation it is not clear what is a "given" event and what is not a "given" event.

13. Claim 33 is rejected under 35 U.S.C. 112, 2nd Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim element “means for providing a flag cell...” is a means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. However, the written description fails to disclose the corresponding structure, material, or acts for the claimed function. There is no method of providing or structure that provides or forms a flag cell for each word or bit line described. The flag cells are simply there. Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function, applicant is required to clarify the record by either:

(a) Amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)); or

(b) Stating on the record what the corresponding structure, material, or acts, which are implicitly or inherently set forth in the written description of the

specification, perform the claimed function. F& more information, see 37 CFR 1.75(d) aid MPEP 21si and 608.01(0).

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Gupta et al. (U.S. Patent 6,166,959).

16. Regarding independent claim 21, Gupta (see Fig. 1 for the structure and Col. 4 Lines 10-21 for ...) teaches:

A method for operating a memory arrangement (Fig. 1) having rewritable memory cells (Flash Memory Cells Fig. 2 No. 16) which are arranged at crossovers (cells 16, are found at the crossing of the horizontal word lines 12-1 through 12-m and vertical bit lines 14 and 18) between word lines (Fig. 1 No. 12-1 through 12-m) and bit lines (Fig. 1 No. 14 and 18), in which arrangement (Fig. 1) the memory cells (16) comprising:

reading out information (Col. 4 Lines 10-19 Explains two reading operations one is reading the refresh pointer bitline, the other is inherent, data must first be read from the row to determine what data is to be written before it is written in a buffer.) stored in the memory cells (16) in a nondestructive manner (This is inherent in flash memory, applicant's specification admits this, Page 1

lines 11-21); and subjecting those memory cells (16) which are arranged either along a word line (No. 12-1 through 12-m) or along a bit line (14 and 18) (In this case a row is refreshed, so along the word line) along which at least one reading operation (the reading of a value of "0" in the pointer bit line Col. 4 Lines 10-12 or the later inherent reading operation before the refresh discussed above) has previously taken place (both of these reading operations take place prior to the REFRESH ERASE and REFRESH PROGRAM, Col. 4 Lines 10-19), to a refresh operation (REFRESH ERASE and REFRESH PROGRAM Col. 4 Lines 19-22).

17. Regarding claim 24, Gupta (see Col. 3-4 Lines 66-09 for the steps) teaches,

The method as claimed in claims 21, comprising:

triggering ("Internal refresh is performed") the carrying-out of the refresh operation ("internal refresh") by another given event ("every user erase/program cycle" in the first embodiment or "in response to a command" in the second and third embodiments).

Claim Rejections - 35 USC § 102 / 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claim 23 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gupta.

21. Gupta fails to explicitly teach **resetting** the information stored in the affected flag cells (Fig. 1, cells No. 16 of the pointer bit line No. 18) **to a standard value** when carrying out the refresh operation (REFRESH ERASE and REFRESH PROGRAM).

Gulpa (See Col. 4 lines 19-26 and Fig. 1) teaches an INCREMENT operation that is performed in conjunction with the REFRESH ERASE and REFRESH PROGRAM. The increment command increments the row address and programs the memory cell (16) on the refresh pointer bit line (18) of the next row to be refreshed to a “0”. It is either inherent or obvious that the row that was just refreshed would now be reset to a “1” so that row is not immediately refreshed again.

The SCAN operation (see Col. 4 Lines 10-15) reads each cell (16) on the pointer bit line (18) sequentially until a “0” is discovered. If the memory cell (16) is never reset, then the same row would just keep getting refreshed over and

over again. Therefore it is either inherent or would have been obvious to one of ordinary skill in the art at the time of the invention to reset the memory cell on the pointer bit line to a 1 when carrying out the refresh operation.

Allowable Subject Matter

22. Claims 13 and 25 are allowed.

23. Claims 14-20 and 26-33 would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action.

24. Claim 33 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

25. Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten or amended to overcome the objection(s) set forth in this office action.

26. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or suggest:

A memory arrangement having a flag cell either for each word line or for each bit line, the flag cell being able to store an item of information that indicates whether at least one of the memory cells either along the respective word line or along the respective bit line has been subjected to a reading operation since a basic state occurred (claims 1, 25 and 33). Storing the occurrence of a reading operation in a flag cell that is arranged either along a word that is affected by the

reading of the word line or a along a bit line that is affected by the reading operation (claim 22).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tran et al. (U.S. Patent 6,519,180) teaches a restore flag that indicates whether cells that have been read have been changed and whether they need to be restored to their original voltage levels. (Col. 12 Lines 11-15)

Chou et al. (U.S. Patent 6,633,500) teaches a HiCR Flash array with similar characteristics as Gupta.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R LANCE REIDLINGER whose telephone number is (571)270-7353. The examiner can normally be reached on 9:30am - 3:30pm Mon-Thur and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571)272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R LANCE REIDLINGER/
Examiner, Art Unit 2824

/Son T Dinh/

Primary Examiner, Art Unit 2824